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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,426	07/18/2003	Vasilis Z. Marmarelis	064693-0074	4072

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EXAMINER

JAWORSKI, FRANCIS J

ART UNIT PAPER NUMBER

3768

DATE MAILED: 09/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/623,426

Applicant(s)

MARMARELIS ET AL.

Examiner

Jaworski Francis J.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) No PTO 892
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date March 13, 2006.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

The status of cases mentioned on page 5 of the specification should be updated as appropriate.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1 – 31 are rejected under 35 U.S.C. 102(a) as being anticipated by Kim et al (newly of record with the IDS filed on March 13, 2006). Insofar as, for purposes of the statute 'others' is construed as pertaining to a different inventive entity as in this co-authorship circumstance which discusses non-linear ultrasound transmit-receive system modeling using Laguerre-Volterra networks.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 12 – 16, 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al (US6312379, newly of record) insofar as since Bradley et al pre-distort for system non-linearities so as to optimize the strength of the bona fide contrast agent harmonic under study and evaluate this pre-distortion via graphs, it would be inherently obvious to associate a graph with a model since the wavetraces relate to underlying mathematical explanations therefore. Additionally constraints would be extant on the transmitted signal regarding maximum mechanical index and peak power levels vs FDA limits, for those claims 25 and 29 for which no relationship between constraints on the received signal and the excitation signal are recited.

Claims 1, 7, 12 – 22 and 25 – 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daft et al newly of record insofar as the latter while directed to modeling of a transducer stack insofar as the publication additionally suggests incorporating same into the system model it would have been obvious to model nonlinearity of the transmitter or transmission model as part of the system.

The remaining prior art submitted with the Information Disclosure Statement filed on March 13, 2006 has been treated as follows:

Rhyne et al is directed to modeling of a received backscattered ultrasound signal so as to apply optimal receive processing. Buhler et al, two patents and Goll et al is directed to use of optimization processing of received ultrasound signals to provide bone quality indices therefrom. Seyed-Bolorforosh et al in its most relevant light is directed inter alia to a system which uses optimizations of the transmit waveform to achieve desired received signal characteristics including use minimization or nulling and not maximizing a received signal of any system leakage or tissue harmonic non-linearity function relationship, Bradley et al is similarly characterizable, Haider et al optimizes higher order non-linearities in the received signal by using modeling to achieve parameter estimation for weightings in the received signal not optimization of the transmit signal relative to particular constraints. Bianco et al is directed to the use of admittance functions in association with a neural network to estimate bone parameters during an electromagnetic energization, Goll et al, Buhler et al are directed to measurements associated with non-linearities in receive processing. Chiao et al is directed to bi-phase encoding to achieve higher harmonic to fundamental or harmonic to noise ratio in the received signal. Schneider et al is directed to a diverse position-locator system. Sinha (see also US6644119) is directed to flow meter calibration for resonance features to facilitate measurement. Mourad et al is directed inter alia to

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establishing vascular pressure relationships in order to characterize tissue properties.

Banjanin et al (newly of record with the aforementioned IDS) is cumulative to Seyed-

Bolorforosh et al in tailoring multiple component customized waveforms. Marmarelis

(article) suggests system modeling but does not suggest an ultrasound transmit-receive

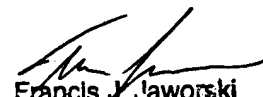
use.

Any inquiry concerning this communication should be directed to Jaworski

Francis J. at telephone number 571-272-4738.

FJJ:fjj

08202006


Francis J. Jaworski
Primary Examiner